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ABSTRACT

A pilot study to investigate the views of Sir Herbert Read on art education is presented. The views include: (1) Real art education (visual language) represents a group of stimuli-response behaviors which direct and shape us; (2) The policy of education through art is based on the hypothesis that the images we evoke in the course of any kind of cognitive activity have a universal significance; and (3) The bulk of the cues and stimuli in our time-life-environment are visual. A review of the literature was undertaken. A group of 28 females matched in terms of College Board Scholastic Aptitude Test verbal and math scores were measured in terms of emotional well-being, study skills and readiness, and problem-solving abilities. The t-ratio for the percentile averages earned by Group A (Visual Arts majors) and Group B (non-Visual Arts majors) was zero. Therefore, no statistically significant evidence was found to support Sir Herbert's presumption that art education eventuates in improved study habits and attitudes. (CK)

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Art Education - Means or End?*

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Objective

This pilot study was designed to investigate, empirically, the following views of Sir Herbert Read relating to art education:

(1) Real art education - termed 'visual language' - represents a group of stimuli-response behaviors which direct us, shape us, and maintain our very existence - all the time.

(2) "Our policy of education though art is based on the hypothesis that the images we evoke in the course of any kind of cognitive activity have a universal significance, and correspond to something permanent and unchanging in the nature of man." (Read, 1966)

(3) The bulk of the cues and stimuli in our time-life-environment are visual. Vision represents 75% of the total intake of our five senses, yet our educational activities in large measure are almost exclusively verbal. In Sir Herbert's view - herein lies both the problem and the challenge.

The specific objective then of this exploratory, pilot inquiry, was to 'test' two hypotheses:

#1 - That art education (the language of vision), offered at a collegiate level demanding the intellectual effort required for any academic subject, helps students achieve -

(1) a greater degree of emotional well-being through improved self-image; the latter being brought about by helping the student produce satisfying objects he can see.

(2) Improved study habits and attitudes toward study, and

(3) Greater academic progress (achievement) than those who are not exposed to art education.

#2 - That art education provides a means for learning problem solving. Sir Herbert considers 'inventiveness', 'resourcefullness', 'imagination', and 'ingenuity' to be synonyms for creativity. Consequently, he hypothesized art education (visual learning)to be a direct route to the student's mind in developing these skills for application to other subject-matter areas.

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Clearly then - if corroborating evidence is found for either or both of these hypotheses, the potential educational-learning implications could be very substantial. If the effects of real art education upon student learning are as hypothesized by Sir Herbert, the curriculum-structuring impact could be far-reaching at all levels of formal schooling.

Literature Review

Although what follows does not purport to be either a 'complete' or exhaustive review of the literature, it is believed to be quite representative of what has been reported in the research literature relating to art education and learning. A relatively new and specialized vocation associated with art education, learning, and life coping, is to be found in the occupation of Art Therapist. As reported by Campbell (1962) .... "A time-worn adage has it that one picture is worth a thousand words. This was never truer than in art therapy, a relatively new approach to the care and treatment of the retarded and the mentally or emotionally disturbed. In helping both the retarded and the disturbed, communication is often difficult. The patient may be quite incapable of putting his feelings into words. Even for the highly articulate person, speech can fail to express the needs and fears provoked by a driving and impersonal world. This failure is especially true of emotional conflicts lying hidden in the subconscious.

As Naumberg (1966) noted, ... "The art therapist bases his work on the premise that every individual, whether trained or untrained in art, has a latent capacity to project his inner conflicts into visual form. As patients picture such inner experiences, they frequently become more verbally articulate... (and) those originally blocked in speech often begin... to explain their art productions."

Skipper (1971) has also observed: "Research on creativity has been deficient in longitudinal experiments that systematically attempt to improve the creativity in adolescents. This three year longitudinal study describes the influence of the Living Arts Center of the Dayton Public Schools in the development of creative behavior of adolescents.

"The Center is an example of a larger environment which values creativity. It combined an expression of creative values on the part of students, their families, nationally recognized artists, the federal government, the local school and community. Students participated after the normal school day and on Saturdays in creative writing, dance, drama, music, and visual arts activities. Although a student selected one art area in which he concentrated, he was encouraged to explore and experiment in the other art areas. Guest artists of national fame visited the Center to perform and conduct seminars.

Field trips, art shows, writing exhibits, theatre and dance productions were added enrichment to the typically close teacher-student relationship that characterized the program. ...

"Creativity was measured by a variety of techniques. Creative thinking by the Torrence Test of Creative Thinking, Verbal and Figural Form A; (Torrence, 1966). The present study used a three year longitudinal design, a control group, and various means of measuring creativity, improving the possibility of generalizing these findings. ...

"All students (N = 35) who participated in the program had significantly more community cultural experiences than the control group. Specifically, participants attended symphony orchestra concerts, visited the art museum, attended theatre performances, and participated in local community art organizations more often than the control groups.

"Both male and female participants earned significantly (beyond the .05 level of confidence) higher scores in verbal fluency, verbal flexibility, and verbal originality. These findings indicate participants produced more ideas, showed greater variety of ideas and were capable of shifting frames of reference or using a variety of strategies in generating ideas than the control group. ...

"These results suggest that students who have had experiences in an environment which valued creativity become more creative than adolescents who did not experience such an environment. Opportunity and encouragement led to greater participation in cultural experiences in the local community. Thinking abilities that emphasized facility, penetration, depth, and originality were increased."

Cohen (August 15, 1968) described a project involving the contribution of the art in the education of disadvantaged children, the purpose of which was to provide assistance through a summer demonstration program (the Friends/Morgan Project) intended to increase the academic skills of 120 underachieving inner-city children through an arts curriculum. The Primary Mental Abilities Test (PMA) was the standardized testing instrument utilized. Results over the 9 month testing indicated that:

(1) younger children (1st and 2nd grades) who participated in the art program benefited more than the older children (3rd and 4th grade) did.

(2) the total PMA test scores for the non-participating older children were significantly higher than the scores made by the older children who did participate.

(3) the younger children who participated in the project made important gains in the Perceptual Speed sub-test of the PMA, but that this gain was not significantly different from that made by younger children who did not participate in the project.

What may be said generally about this project is....."it has demonstrated that when well-motivated teachers and a properly constructed arts curriculum are combined with underachieving, impulsive, and restless children in an atmosphere free of the traditional classroom constraints, significant achievement in both general learning behaviors and specific subject matter skills can be achieved. ...The results of the Project indicate: First, a more lengthy

exploration should be made of the arts procedure in the summer program setting to analyze the effect of a longer-term study. Second, additional work must be done to shape meaningful programs and procedures, for those segments of this group which did not achieve significant educational development. Third, a major thrust should be made toward the extension of the proven procedure to the academic community at large and use should be made of them in existing school settings -- for the ultimate benefit of larger numbers of similar children." (see Appendix 4 of Cohen report).

Hartshorn and Brantley at the University of North Carolina, (1973, p/ 245) in discussing the effects of dramatic play on classroom problem-solving behavior, observed that..."results supported the predictions made regarding the effectiveness of dramatic play in improvising problem-solving skills. ...The experimental classes gave more correct answers, fewer incorrect answers, and more answers in which they assumed responsibility for solving the problems. This finding is in agreement with studies on school motivation and acquisitions of knowledge reported by Cook (1948); Makhlakh (1962); Sarbin (1946); and two shafel reports, both in 1967. The last two referenced, state that since dramatic play provides an environment that stimulates children to explore in their own way, to the limits of their experience, the activities of a selected social studies area; it increases the interest in school subjects and their motivation to learn, and thus results in greater acquisition of knowledge. They also state that children who have the chance to practice many roles and to face the demands of new situations under conditions that do not penalize, but rather maximize learning, will thus develop better problem-solving skills. The results of the present experiment support these statements."

A paper presented by Dobbs (1971) at an American Educational Research Association meeting points out that art education has been a part of the curriculum of American public schools for more than a century, since the first programs for drawing instruction were organized in Massachusetts in the 1870's. Since that time a paradoxical theme has emerged which continues to characterize art education: it has consistently embraced rationales for its place in the curriculum which seemingly have advanced the interests of everything but art! Historically, art education has become tethered to the services of almost every other area of school life. Dobbs organizes these various influences into the following eight categories: (1) Concern for Commerce: In the Service of Industry; (2) Faith and Morality" The Influence of Philosophical Idioms; (3) Child-Centered Culture: Trends in Psychological and Mental Health; (4) Science and Sensibility: The Growth of Research; (5) The Child as Artist: Impact of the Progressive Era; (6) Government and Art: In the Service of Public Culture; (7) Apollo and the Sacred Grove: Relationships with Artists and Museums; and (8) The Percolation of Taste: Fad, Fashion and Contemporary Art.

Maslow (1971, p. 153) cogently observed...."Effective education in music, art, dancing and rhythm... is closer to the goal of learning one's identity as an essential part of his education. And if education doesn't do that, it is useless. Education is learning to grow, learning what to grow toward, learning what is good and bad, learning what is desirable and undesirable, learning what to choose and what not to choose. ...I think that the arts are so close to our psychological and biological core, that rather than think of these courses as a sort of whipped cream or luxury, we must let them become basic experiences in our education. They could very well serve as a model ... the means by which we might rescue the rest of the school curriculum from the value-free, value-neutral, goal-lacking meaninglessness into which it has fallen."

White & Allen (1969) in an interesting study report an investigation designed to test the hypotheses: (1) pre-adolescent boys show greater growth in positive self-concept when subjected to an art counseling program than when they receive a traditional, non-directive counseling program having the same goal; and (2) this difference will continue to exist on into adolescence. A fourteen month follow-up of two groups (15 receiving art counseling; 15 receiving traditional non-directive counseling) through a multivariate analysis of covariance with ten criteria - ten subscales on the "Tennessee Self-Concept Scale" - and ten covariates - pretest scores on the subscales, were performed on the data. The results supported the hypotheses.

The potential value of art as an asset in the teaching of English is reported by Speidel (1969). To discover if slides of portrait paintings could be used to train students to be more visually perceptive and consequently to increase specificity in their descriptive writing, pairs of classes (one control, one experimental - totalling 148 sophomore students) were exposed to the principle of specificity through written exercises and discussions of literary passages. Samples of descriptive writing before and after treatment were scored. Although a comparison of the two groups' scores did not show a statistically significant difference, 75% of the experimental group improved in specificity as opposed to 60% of the control group. Student evaluations rated written instruction most interesting when accompanied by slides.

McFee (1968) investigated the relationship of a creativity-oriented design curriculum to the creative development of gifted adolescents. After six months of the program, students in the experimental group generally performed significantly better in tests of fluency, adaptive flecibility and originality requiring divergent production of familiar cognitive responses. Attitudes towards creativity changed in a positive direction, and experimental students indicated less fear of failure and more self-confidence. Conclusions were that an art original focusing on problem solving and creative behavior has important functions in the education of the gifted.

Lovano (1971) offers the following observations germane to this study:

(1) "In reviewing a number of longitudinal studies, Bloom (1964) concluded that during the first three or four years, approximately 50 per cent of the development of intelligence takes place that is ever to occur in the life cycle. This critical factor seems to indicate that a child's cognitive fate depends on the quality of his early environmental experiences. Studies on environmental deprivation reveal impaired cognitive growth ... the significance of preschool education for the disadvantaged child is no longer questioned." (p. 13)

(2) "The very nature of art lends itself to critical motor-sensory learning basic to perceptual and intellectual growth during the first four years. Awareness of objects in the environment can be heightened by feeling and looking in order to compare likenesses and differences of color, shape, size, and texture. Skills in naming and classifying develop through interaction with objects and events. Implicity in the research literature of childhood development and environmental deprivation is the importance of these types of sensorial experience. (See Gardner - 1968; Thompson - 1962). It seems to follow that an early childhood education curriculum using art as the core subject would increase the child's ability to respond visually and cognitively. ... Some studies exist supporting this position." (See Douglas & Schwartz - 1967; Dubin - 1964; & McFee -1970).

Procedures

For a group of 28 young women, entry and graduation levels (after completion of a 2-year college program at Harcum Junior College) were measured in terms of emotional well-being; study skills and readiness; and problem-solving abilities for an experimental group (Visual Arts majors; N = 14) and a control group (Non-Visual Arts majors; N = 14) who were 'matched' in terms of College Board Scholastic Aptitude Test verbal and math entry scores. Data generated from these pre-and-post test administrations were statistically treated to ascertain whether 'real' (i.e. statistically significant) differences existed between the scores of the control and experimental groups.

Perhaps the most common problem in research is to determine whether two samples differ sufficiently in one or more characteristics to discredit the hypothesis that the samples are from populations similar in the characteristics chosen for comparison. If the differences between the samples are too great to be reasonably attributed to sampling fluctuations, the "null" hypothesis is rejected, and the conclusion follows that real differences exist in the population from which the samples were drawn. Such non-chance, or real differences, which cannot reasonably be ascribed to chance data fluctuations, are said to be "significant."

Results

To insure numerical comparability of the experimental and control groups, they were made equal in number. Measurements for the experimental Group A (Visual Arts majors) and control Group B (non-Visual Arts majors) yielded the following facts: entry-levels of problem-solving ability were obtained through an adminis tration of the Watson-Glaser Critical Thinking Appraisal during Freshman Orientation Week (September 1971). Graduation-levels were obtained by a subsequent administration of this instrument just prior to graduation, two academic years hence (May 1973).

The Watson-Glaser Critical Thinking Appraisal instrument consists of a series of test exercises which require the application of some important abilities involved in problem-solving skills. These exercises include problems, statements, arguments, and interpretations of data similar to those which a citizen in a democracy might encounter in her daily life as she works, reads newspaper or magazine articles, hears speeches, participates in discussions on various issues, etc. There are five sub-tests which include:

Inference:- Samples ability to discriminate among degrees of truth or falsity of inferences drawn from given data.

Recognition of Assumptions:- Samples ability to recognize unstated or presuppositions which are taken for granted in given statements or assertions.

Deduction:- Samples ability to reason deductively from given statements or premises; to recognize the relation of implications between propositions; to determine whether what may seem to be an implication or a necessary inference from given premises is indeed such.

Interpretation:- Samples ability to weigh evidence and to distinguish between (a) generalizations from given data that are not warranted beyond a reasonable doubt, and (b) generalizations which, although not absolutely certain or necessary, do seem to be warranted beyond a reasonable doubt.

Evaluation of Arguments:- Samples ability to distinguish between arguments which are strong and relevant and those which are weak or irrelevant to a particular issue or view.

The raw scores earned by these twenty-eight students were converted to percentiles. These percentiles are the data which were statistically treated, and these percentiles are based upon a normative group of some 5,297 Visual Arts freshman tested by Watson & Glaser.

To determine if the obtained differences between the means earned by these two groups in the Watson-Glaser and other measuring instruments utilized, were likely to be chance or true ones, the t-ratio was applied to the data. How large must a t-ratio be before an obtained difference between two means can be accepted as 'significant' - i.e. before one can assume that it is unlikely to have occurred by chance variation or sampling fluctuations?

A 'convention' or arbitrary agreement stipulated that the obtained difference must be at least large enough so that it could arise by chance alone only 5% of the time if there were no true difference between the means of the populations from which the samples were drawn; (the so-called "5% level of confidence").

A t-ratio of 3 is a virtual certainty (about 999 chances in 1000) that a true ("significant") difference exists between the means of the two populations from which the samples were drawn. A t-ratio larger than 3 is that much more assurance that a true difference exists. Speaking literally, there is never absolute certainty in science. All conclusions drawn from experiments contain an element of risk. What the t-ratio procedure permits one to state, quite precisely, is the extent of the risk. Therefore, for t-ratios of 3 or greater, the probability of obtained differences being due to sampling fluctuations, or other change variations, is less than 1 in 1000 - or a very high level of confidence that the differences obtained reflect true differences in the means of the populations from which the samples were drawn.

The t-ratio was 4.37 for the averages earned by Groups A and B, (comparing their different converted-score percentiles of their before-and-after test administrations of the Watson-Glaser Appraisal). This measurement of the problem-solving dimension therefore suggests, with a high degree of probability, that the difference in group performance between the Visual Arts majors (average = 9) and the non-Visual Arts majors (average = 2), reflects a true difference, and not a chance or 'sport' variation. Therefore, for this limited sample, the data generated supports Sir Herbert's hypothesis that.... "art education provides a means for learning problem solving."

In the dimention of emotional well-being, the instrument utilized was the Emotional Stability scale of the Gordon Personal Profile inventory. The normative group for this instrument consisted of 1300 college women students. Those scoring above average are characterized as being ---"well balanced, emotionally stable and relatively free from anxieties and nervous tension," those scoring lower (below average) being characterized as.... "associated with excessive anxiety, hypersensitivity, nervousness and low frustration tolerance, as well as poor emotional balance.

The t-ratio was 3.33 for the percentile averages earned by Groups A and B, (comparing the differences between the before-and-after scores). Therefore, statistically speaking, there is less than 1 chance in 1000 that the obtained difference between Group A (average = 10) and Group B (average = 4) could have occurred solely through chance variations. Here again, the larger average increase for the Visual Arts majors is supportive of Sir Herbert's contention that art education... "helps students achieve a greater degree of emotional well-being through improved self-image; the latter achieved by helping the student produce satisfying objects to see."

Turning to the area of study habits and attitudes, base-line data was obtained from a Freshman Week administration of the "Survey of Study Habits and Attitudes" inventory. Specifically, this paper and pencil inventory provides information relating to student promptness in completing academic assignments, use of effective study procedures, feelings and opinions about teachers, their classroom behavior and methods; and approval of educational objectives, practices and requirements. The normative group for this instrument was a sample of 3054 freshmen at nine different colleges. High scores on this inventory are characteristic of students who earn good grades; low scores tend to be characteristic of those who get low grades or find college work difficult.

The t-ratio for the percentile averages earned by Group A (Visual Arts majors) and Group B (non-Visual Arts majors) was zero, as the averages earned by both groups was the same; consequently, there was no difference in the group performance between these two small-sample groups. Therefore, in this instance, no statistically significant evidence was found to support Sir Herbert's presumption that art education eventuates in improved study habits and attitudes.

It is noted, however, that the total amount of improvement for the Visual Arts majors was slightly larger than that of the non-Visual Arts majors (28 vs 27); thus being in the 'expected' direction if one inclines toward Sir Herbert's views. The lack of a statistically significant difference in the posttest performance of these two groups may, in part, be attributed to the factors responsible for the following findings.

A research inquiry by the Harcum Office of Research, Blai (1972), revealed that for a random sample of 60 Harcum 1972 graduates, their two-year stay at Harcum was associated with a substantial improvement in their problem-solving abilities as measured by the Watson-Glaser inventory. The t-ratio for the pre-posttest group performance average difference was 7.4.

It is therefore concluded, that the improvements noted in this art education inquiry occurred in a collegiate environment wherein such improvements among both non-Visual Arts as well as Visual Arts majors might well have been anticipated. Where effort is made to teach the difference between reasoned-logical, and unreason-illogical thinking, this might well account for the close matching in the improvements evidenced by both Groups A and B.

The fourth and final area investigated was that of academic achievement, as reflected in the graduation cumulative averages of the twenty-eight young women comprising Groups A and B. Comparison of the groups' averages earned yielded a t-ratio of 4.4. Therefore, the difference of .4 (on a scale of grade A = 4; grade B = 3; Grade C = 2; and grade D = 1), which favored the Visual Arts majors is, statistically speaking, significant; (far less than 1 chance in

1000 that this difference might have occurred through sampling or other chance fluctuations alone). In this dimension of academic progress, Sir Herbert's view that .... "greater academic progress (achievement) than those who are not exposed to art education" is supported insofar as the results achieved by this small-sample group of students.

It is, of course, possible that the differences noted in group academic averages earned may be in part due to the fact that there are different clusters of courses required for graduation among the differing program majors - some being more-demanding (academically-speaking) than others. On the other hand, it appears entirely reasonable to conclude that some of this Group A incremental improvement over Group B is associated with the hypothesized 'benefits' of art education as delineated by Sir Herbert Read.

Discussion and Conclusions

In theory, there are two principal elements that are associated with student achievement (learning). These are: (1) differences in initial aptitude among students (Nature), and (2) college characteristics contributing to student learning (Nurture). Certainly any study of the college's impact on students must take into account differences in student aptitude before valid consideration can be given to measuring the possible differential effects of the college's contribution to student achievement.

It is recognized that achieving higher scores on a posttest may, in part, be due to the "maturation" factor, as well as "practice effect". As a result of their everyday life-learning experiences, students grow and develop - with or without participating in experimental programs! However, if statistically significant differences are found among groups who are exposed to differing academic environments (i.e. collegiate programs), the net effect is to hold constant the factors of "maturation" and "practice effect" - to which all are subject - and therefore identify such differences with the different environmental conditions (i.e. the college 'majors).

To attempt to control for the student's ability prior to college entrance - the ability which has contributed to the student's academic growth while in college, this study considered the average improvements among several samples of Harcum students in a series of skills/achievements/characteristics areas. Through a "before" and "after" testing situation for two samples of freshmen who were retested just prior to completion of their 2-year program, the net effect was to hold constant the factor of differences in student aptitude, by combining the differences in improvement among the low, average, and high aptitude students. The remaining differences between their collective performance initially upon entrance to Harcum, and their performance just prior to graduation two years hence, may then reasonably be associated with the college's effect, (the so-called environmental "press") upon the student.

In addition, verbal and mathematics abilities of the students comprising the two samples were controlled in that College Board SAT scores did not vary significantly (less than 50 point 'spread' of scores among these 'matched' experimental and control group subjects). Therefore, the performance differences noted cannot be explained in terms of initial-ability differences.

The 'results' of this pilot study have generally shown statistically significant differential-gains for the Harcum group enrolled in the 2-year Visual Arts curriculum, in contrast to the group enrolled in various other curriculums. The pertinent statistical hypothesis examined was the so-called "null hypothesis". To accept the null hypothesis is to conclude that these observed differences between these two groups are due to chance: to reject the null hypothesis is to conclude that the differences are non-chance, or "real."

It is generally acknowledged that the visual and graphic arts are playing an increasingly greater role in contemporary life, and students who concentrated in this area at Harcum evidently were provided with an opportunity to develop their emotional well-being and problem solving capabilities which, for these particular small sample groups were found to be 'greater' (with a high degree of probability of being a true difference) than that achieved by a matched group enrolled in other programs of study at the college.

Therefore, in conclusion, it is believed that further study, through replication of this pilot exploration, might well be fruitful to ascertain whether such gains:

(1) exist at various schooling levels; e.g. elementary, secondary, and collegiate.

(2) are found among males as well as females, and

(3) persist over time.

If such studies are well-designed, replicated several times, and show consistent directional findings and meaningful strengths of association, then the results of such investigations may be generalized for purposes of modifying existing educational programs and practices.

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